CLAIMS

What is claimed is:

1. An interface for programming a motor control of a motor, comprising:

a microcontroller in signal communication with a first signal port and a second signal port, the first signal port adapted for receiving a signal from a computer, the second signal port having a signal terminal adapted for sending a signal to the motor control and a power terminal adapted for sending power to the motor control; and

a solid state relay in signal communication with the microcontroller and the power terminal, the solid state relay having a control element responsive to first and second signals from the microcontroller for turning on power and for turning off power, respectively, to the motor control;

wherein the microcontroller is adapted for sending a programming signal from the computer to the motor control in response to the programming signal being sent within a defined time following the control element turning on power to the motor control.

2. The interface of Claim 1, further comprising:

a plurality of signal paths for communicating signals between the first signal port and the second signal port, each signal path adapted for signal communication at a baud rate equal to or greater than 2400 baud.

3. The interface of Claim 2, wherein:

each signal path is absent an optoelectric isolator.

4. The interface of Claim 1, further comprising:

a comparator in signal communication with the second signal port and the microcontroller;

wherein an output of the comparator is representative of a cable connection state between the motor control and the motor;

wherein an input value to the comparator is compared against a threshold value;

wherein the output of the comparator is representative of the cable connection state being open in response to the threshold value exceeding the input value.

5. The interface of Claim 4, further comprising:

an impedance network in signal communication with the comparator and the microcontroller;

wherein the impedance of the impedance network is responsive to the microcontroller, and the value of the threshold level is responsive to the impedance of the impedance network.

6. The interface of Claim 5, wherein:

the impedance of the impedance network is adjustable by a user via a signal from the computer.

7. The interface of Claim 6, wherein:

the computer is adapted for signal communication with the Internet.

8. The interface of Claim 1, wherein:

the microcontroller further comprises erasable and programmable memory for storing firmware used for operating and controlling the motor;

wherein the firmware is upgradeable via the computer.

9. The interface of Claim 8, wherein:

the computer is adapted for signal communication with the Internet.

10. The interface of Claim 1, further comprising:

a signal converter in signal communication with the microcontroller and the first signal port for converting a logical 0 signal and a logical 1 signal from an RS232 format to a format recognizable by the microcontroller, and vice versa.

11. The interface of Claim 1, further comprising:

first and second status lights in signal communication with and responsive to the microcontroller, the first status light representative of the interface being ready to accept commands from the computer, the second status light representative of the interface not being ready to accept commands from the computer.

12. The interface of Claim 1, wherein:

the second signal port consists of eight terminals, wherein six of the eight terminals may function as signal terminals and two of the eight terminals may function as power terminals.

13. The interface of Claim 1, wherein:

the defined time is equal or less than 10 milliseconds.

14. The interface of Claim 1, further comprising:

a reset network in signal communication with the first signal port and the microcontroller, the reset network having a reset control element, the reset control element being responsive to a reset command from the computer, and the microcontroller being responsive to the reset control element;

wherein a reset command signal received at the reset control element from the computer results in a reset signal being received at the microcontroller and a ready signal being generated by the microcontroller, the ready signal indicating that the interface is ready to accept commands from the computer.

15. A method for programming a motor control of motor, comprising:

receiving at an interface a reset signal from a computer, the reset signal representative of a user request to program the motor control;

in response to the reset signal, generating a ready signal at the interface and turning on power at the interface to the motor control;

receiving at the interface a programming signal from the computer within a defined time following the power being turned on to the motor control; and

receiving and communicating via the interface the programming signal from the computer to the motor control.

16. The method of Claim 15, further comprising:

in response to the programming signal from the computer being received at the interface outside of the defined time following the power being turned on to the motor control, preventing the motor control from entering a test mode and from acting upon the programming signal.

17. The method of Claim 15, further comprising:

receiving at the interface a logical 0 and a logical 1 signal from the computer in RS232 format;

converting the logical 0 and logical 1 signals received from the computer from RS232 format to a format recognizable by a microcontroller at the interface; and

sending the converted signals to the microcontroller for processing.

18. The method of Claim 15, further comprising:

sending from the interface a cable test signal on a signal line to the motor control, and receiving in response thereto a return test signal on a cable check line;

comparing the value of the return test signal to a comparator threshold value; and

in response to the comparator threshold value exceeding the value of the return test signal, providing a cable test failure signal.

19. The method of Claim 18, further comprising:

adjusting the comparator threshold value via the computer.

20. The method of Claim 19, wherein:

the computer is adapted for signal communication with the Internet.

21. The method of Claim 15, wherein the receiving and communicating via the interface the programming signal from the computer to the motor control, further comprises:

communicating the programming signal from the computer to the motor control at a baud rate equal to or greater than 2400 baud.

22. The method of Claim 21, wherein the communicating the programming signal from the computer to the motor control, further comprises:

communicating the programming signal from the computer to the motor control in the absence of an optoelectric isolator.

23. The method of Claim 15, further comprising:

receiving at the interface a request from the computer to perform an optoelectric isolator test on first and second lines of an optoelectric isolator at the motor;

in response to the received request for the first line, performing the optoelectric isolator test on the first line and providing a test result signal representative of the state of the optoelectric isolator; and

in response to the received request for the second line, providing a pass verification signal independent of the state of the optoelectric isolator.

24. The method of Claim 15, further comprising:

receiving at the interface upgraded firmware from the computer; and

storing the upgraded firmware at an erasable and programmable memory at a microcontroller at the interface.

25. The method of Claim 24, wherein:

the computer is adapted for signal communication with the Internet.

26. A method for testing a cable connection between an interface and a motor control, comprising:

receiving at an interface a cable test request signal from a computer;

sending from the interface a cable test signal on a signal line to the motor control, and receiving in response thereto a return test signal on a cable check line;

comparing the value of the return test signal to a comparator threshold value; and

in response to the comparator threshold value exceeding the value of the return test signal, providing a cable test failure signal.

27. The method of Claim 26, further comprising:

adjusting the comparator threshold value via the computer.

28. The method of Claim 27, wherein:

the computer is adapted for signal communication with the Internet.